
Data Glass 2/A

USER'S MANUAL

 **SHIMADZU CORPORATION**
AIRCRAFT EQUIPMENT DIVISION

Thank you for purchasing the Shimadzu DataGlass2/A Head Mounted Display. Please carefully read all of the cautions and warnings contained in this User's Manual before using the DataGlass2/A. Keep this user's manual in a safe place so you can refer back to it as necessary.

Limited Warranty

1. Warranty Period

Shimadzu warrants the DataGlass2/A to be free from defects and failure for a period of 12 months from the date of original purchase.

2. Scope of Warranty

If your DataGlass2/A fails within the warranty period, contact Shimadzu in order to obtain a Return Material Authorization. Failed units are subject to repair or replacement at Shimadzu's sole discretion.

3. Warranty Exceptions

If during the warranty period, any failure or damage described in this section is not covered by the warranty and may furthermore void the manufacturer's limited warranty.

- Damage or failure resulting from natural disasters, riots, fires or similarly severe environmental conditions.
- Damage or failure resulting from subjecting the DataGlass2/A to harsh or excessive shock.
- Damage or failure resulting from mishandling, improper connection or improper operation of the DataGlass2/A.
- Damage or failure resulting from improper storage of the DataGlass2/A.
- Damage or failure resulting from not following the instructions, warnings and cautions included with the DataGlass2/A.
- Damage or failure resulting from any disassembly, repair or modification of the DataGlass2/A not performed by Shimadzu.
- Damage or failure resulting from any lost parts.
- Any attempt to disassemble, repair or modify the DataGlass2/A voids all warranty claims.

Any product on which the serial number has been defaced, modified or removed, voids all warranty claims.

Shimadzu does not warrant that this product will meet with your application requirements and expressly and fully disclaims any warranty of fitness for a particular purpose of the DataGlass2/A; It is your sole responsibility to determine the suitability of this product for your specific needs.

This warranty is provided only to the original purchaser of the DataGlass2/A including those end-users that purchase directly from an authorized Shimadzu reseller. This warranty is valid only in the United States of America and Canada.

4. Exclusion of Damages

Shimadzu's sole obligation and liability under this warranty is expressly limited to the repair or replacement of a defective product at our sole discretion. Shimadzu shall not, in any event, be liable to the purchaser, user, or any third party for any incidental or consequential damage (including but not limited to, damages resulting from interruption of service and loss of business) or liability in tort relating to this product or resulting from its use or possession.

5. Others

You are solely responsible for all freight, postage and any incurred expenses for returning the DataGlass2/A for warranty repair or replacement. In order to prevent damage during transportation, please repackage the unit in its original box and packing materials. Shimadzu is not responsible for any transportation damages to the DataGlass2/A resulting from improper shipment packaging.

Notes

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Important Safety Instructions

Before using this product, please read the entire contents of this User's Manual and observe all instructions, warnings and cautions. These are provided to help you understand how to safely use the DataGlass2/A.

The DataGlass2/A has been carefully designed to provide years of safe, reliable performance. As with all electronic equipment, there are some basic precautions you should take in order to avoid injury or damage to the equipment.

The DataGlass2/A System consists of a Head Mounted Display (HMD), an Interface Unit and related Accessories.

There are several critical safety considerations that must be observed for safe and proper operation of the DataGlass2/A. These have been classified as follows:



Warning Used where there is a high potential for severe injury or death to the operator unless care is exercised.



Caution Used where there is potential for injury to the operator or damage to other property.



Note Additional information to obtain greater understanding of proper operation and usage of the equipment

Safety precaution

For your health and safety



The DataGlass2/A should not be used by

- Children under 15 years of age.
This product may interfere with the development of their eyes.
- Anyone who has ever experienced convulsive or epileptic fits or loss of consciousness from light flashes or oscillations.
- Anyone with any form of optical/visual handicap.
- Anyone with severely impaired vision (unable to clearly see an object 24 inches from their eyes with eye glasses or contact lenses).
- Anyone with a condition in which one eye is blind or close to blindness.
- Anyone suffering from glaucoma, cataracts, or any other eye related disease.
- Anyone under treatment for vision or eye related medical conditions.
- Anyone suffering from a disease of the circulatory system, such as heart disease, or high blood pressure, should consult a doctor before using the DataGlass2/A.
- Anyone who feels nausea, dizziness, light-headedness or disorientation while using the DataGlass2/A should immediately discontinue use and if symptoms persist, seek medical attention immediately.
- Anyone who uses a heart pacemaker.

This product may interfere with the operation of a heart pacemaker.

Refrain from displaying patterns of flashing lights, rapid color cycling or bursting or any other disturbing signals on the DataGlass2/A.

These are known to adversely affect your health.

Do not use the DataGlass2/A in any environment or situation that requires your attention or concentration on your surroundings.

Using the DataGlass2/A may disturb your concentration or cause you to become disoriented, which could lead to an accident, tripping, falling or other serious or even fatal accidents.

Safety precaution

For your health and safety



Do not use the DataGlass2/A when engaging in, but not limited to, the following or similar activities:

- Walking, running or operating any moving vehicle including, bicycles, motorcycles, skateboards or automobiles.
- Crossing a street or similar traffic area.
- While participating in an athletic or sporting activity.
- When it is necessary to continuously understand and be aware of the environmental conditions of your surroundings.
- When care is needed to negotiate stairs, ladders, escalators, entering or exiting any vehicle, or operating any power tools or other machinery.

Do not use this product when you are subject to strong vibrations, such as in a car on a bumpy road.

This may cause dizziness, nausea, headaches, or motion sickness.

Mount the HMD correctly on your head

Using an incorrectly mounted HMD can cause visual disorders. Mount HMD properly, referring to "Mounting the HMD" (see page 27) of this User's Manual.

Do not use the HMD continuously for 50 minutes or more.

Do not resume operation without resting for 10 minutes.

There is a possibility that the eyes may get tired, the head painful, or other possible physical problems may occur.

Note: This is a general recommendation and may not fit all users of the DataGlass2/A. Some people have visual difficulties that are over/under compensated by corrective lenses or other visual corrections and whose eyesight is not suitable for VDT (Visual Display Terminal) devices.

If at any time you experience discomfort while using the DataGlass2/A, turn the power OFF, remove the HMD from your forehead and take a break/rest. If your symptoms persist, seek medical attention.

You may need to adjust the use/rest ratio depending upon your physical conditions and circumstances, but remember not to exceed the recommended operation of 50 minutes ON followed by 10 minutes OFF.

Safety precaution

For your health and safety



Stop use immediately if your eyes get tired or if you develop a headache while using the DataGlass2/A

During use, sometimes move the body moderately and loosen strain.

It may be necessary to operate the DataGlass2/A for less than 50 minutes at a time. If at any time you experience discomfort while using the DataGlass2/A, remove the HMD from your forehead and take a break/rest. Additionally, do not move, direct, or operate any moving vehicle such as a bicycle, motorcycle, skateboard or automobile, or do not work which needs concentration until your symptoms have receded.

Do not look at the sun with the HMD.

There is a possibility of causing unrecoverable damage to the eyes.



Do not use HMD in a sweaty state.

If it is used while sweating, a rash or a heat rash may be produced on the part of the head in contact with the pad. When sweat is attached to a pad, wipe off with soft cloth before wearing.

Moreover, when you sweat during HMD use, remove the HMD, wipe your head and hand, and wipe the pad and display of the HMD well.

Mount the HMD directly on your head.

The HMD was designed to be fitted on your forehead. When using the DataGlass2/A, please refrain from wearing anything on your head, in your hair (such as hair clips or hair pins), and around your face (such as a mask), except for eyeglasses.

If your skin is allergic or sensitive, consult a dermatologist before using the DataGlass2/A

Depending on your constitution or physical condition, itching, rash or eczema may occur. On the HMD, silicone rubber is used for the front and side pads, and the silver portion is coated with paint composed of acrylic resin and aluminum.

Also, since the HMD's display unit generates a slight amount of heat, there is the possibility of low-temperature burns.

Safety precaution

For prevention of an electric shock, a fire, or failure



Handle with care.

Do not drop, throw or give the DataGlass2/A a strong shock. Moreover, do not bend cables by force or do not pull it. Do not hang a computer from the cable or do not brandish it. It may cause breakage or failure.

If you use the DataGlass2/A after such treatment, it may become the cause of an electric shock.

Do not attempt to reassemble or modify the DataGlass2/A.

It may cause an electric shock, a fire, or failure.

Do not put pieces of metal, such as a clip, inside the DataGlass2/A.

It may cause an electric shock, a fire or failure.

Do not apply water and liquids to the DataGlass2/A.

Do not apply either water or any liquid to the HMD, Interface Unit, and cables. Moreover, do not put into water or any liquid. If you apply water or any liquid to the HMD while wearing it, remove the HMD promptly and turn off the computer. Then, do not use it until after fully drying the HMD. In addition, if water or any liquid enters inside of the HMD and Interface Unit, stop using the product immediately to avoid shock, fire, or unit failure, and contact Shimadzu (see page iv).

Do not put anything heavy on the DataGlass2/A components.

The lens, etc. may become damaged and can cause an injury or failure.

The following describes additional symptoms of a device that needs technical attention and should not be used.

- The HMD display intermittently turns ON and OFF or suddenly loses its signal.
- The HMD, Interface Unit or cables are damaged.
- The HMD or Interface Unit have been dropped.
- The HMD or Interface Unit become hot to the touch.
- There is an unusual sound emitted from any of the components.
- There is smoke emitted from any of the components.
- There is a burning smell emitted from any of the components.

If for any reason you have questions/concerns regarding the usage/operation of the DataGlass2/A, discontinue using it and contact Shimadzu (see page iv).

Safety precaution

For prevention of an electric shock, a fire, or failure



Do not use the DataGlass2/A in any explosive environment or anywhere close to explosives (such as a gas station).

Do not use the DataGlass2/A in the following places, including but not limited to:

- A place with a rapid temperature change (place with moisture or condensation).
- A place with high humidity, dust, or steam.
- A bath, the outdoors where rain and snow are falling, or other moist places.
- Areas with sand/dust/dirt, (such as a desert or sandy beach).
- Places exposed to strong shock, or vibration.

This may cause an accident, fire, electric shock or failure. Refer to "Specification" (see page 7) about use environmental conditions.

When operating the DataGlass2/A in an institution, such as a hospital, factory, or a public means of transportation, follow the rules of that institution or organization.

Do not use the DataGlass2/A in a place where use of an information management system is prohibited.



Do not store the DataGlass2/A in the following places, including but not limited to:

- Inside a vehicle subjected to heat or sunshine.
- Any place exposed to direct sunlight.
- Any place near air conditioners or heaters.
- A place subject to rapid temperature changes (e.g., moisture or condensation).
- A place with excessive humidity, dust, lamp soot, or steam
- A bath, the outdoors where rain and snow are falling and other moist places.
- Areas with sand/dust/dirt (such as a desert or sandy beach).
- Places exposed to strong shocks, or vibrations.
- Near equipment that generates strong magnetic fields or electric waves.

Exposure to these elements may cause the DataGlass2/A to malfunction and break.

Safety precaution

Caution about use environment



Note

- The DataGlass2/A operates only in video modes with SVGA (800x600 dots) or VGA (640x480 dots) resolution and 60Hz refresh rate. The VGA screen at the time of Windows starting is not displayed.
- Do not change the video mode while in use. The DataGlass2/A is not compatible with changed video modes on a computer such as for DVD playback or DirectX games, etc.
- When using the DataGlass2/A with other USB hardware, use a self-powered USB hub (with an external power supply such as an AC adaptor). The DataGlass2/A cannot be used with a bus powered hub (USB hub without an additional power supply such as an AC adapter).

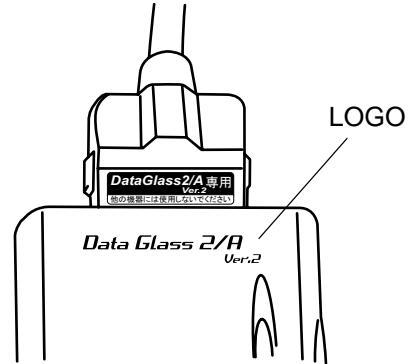
Safety precaution

Others



Please connect the HMD only with the Interface Unit with the logo of "DataGlass2/A ver.2".

Connecting it with other equipment other than the correct Interface Unit will cause a failure and damage to the HMD.



Please attach only Shimadzu DataGlass2/A cables with the Interface Unit. When connecting it with other cables or remodeled cables, it could cause breakage and failure.



LCD is used for the display device of this product. Although on occasion, some dots lack or remain bright, or the color of dots changes, this is a characteristic peculiar to LCD technology, and is not a defect in the product.

Table of contents

1 Features	1
2 Components	3
2.1 Components	3
2.2 Functions of Components	4
3 Specification	7
4 Names of each part	9
5 How to use	11
5.1 Setup of the Computer	11
5.2 Setting the Display Mode, Resolution, and Refresh Rate	12
5.3 Assembling the HMD	13
Attaching the Display Unit	13
Pulling out Display Unit (back-and-forth adjustment)	17
5.4 Connecting the HMD	19
5.5 Attach/Remove Band	23
Attaching the Band	23
Removing the Band	24
5.6 Attaching/Detaching the Cover	25
Attaching the Cover	25
Detaching the Cover	25
6 Using DataGlass2/A	27
6.1 Mounting /Removing the HMD	27
Mounting the HMD	27
Removing the HMD	29
6.2 Adjust the position of the Display Unit	30
6.3 At such time	32
Checking the surrounding situation (Push-up-to-open operation)	32
Changing the image viewing	32
6.4 Storing the HMD	35

7 Adjusting the Image	37
7.1 Operating Environment	37
7.2 Installation	37
Installing the Virtual COM Port driver	38
Checking the COM Port Number	41
Copying Image-Adjustment software to the Hard Disk	42
7.3 Running Image-Adjustment software	42
7.4 Adjusting the Image	45
Adjusting the Image Position	46
Adjusting the Image Quality	47
Adjusting the Brightness	47
Initializing the parameters	48
7.5 Exit the Software	49
7.6 Uninstall	50
Uninstalling Virtual COM Port driver	50
Deleting Image-Adjustment software	50
8 Cleaning	51
8.1 Caution for Cleaning	51
HMD, Interface Unit, Standard Accessories	51
Lens of the Display Unit	51
8.2 Cleaning procedure	52
9 Appendix	53
9.1 Troubleshooting Guide	53
9.2 Name plate	56
9.3 After-sale Service	56
10 Regulations	57
10.1 FCC compliance	57
10.2 Declaration of Conformity	58

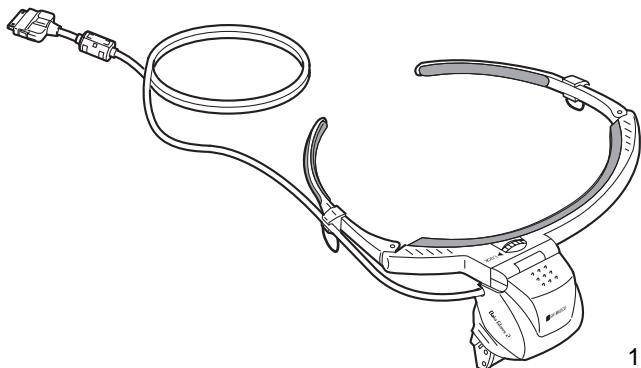
1 Features

- It is a small, light weight and easy to wear Head Mounted Display(HMD).
- With its wide field of view, the user is aware of the surrounding situation and displayed information at the same time. Also, when displayed information is not necessary, the display unit can be pushed-up-to-open and away from the frontal vision of the user.
- Since its optics system is of a see-through type, the user is able to view the outside scenery through the optics system.
- It can display high resolution images (800 x 600dots) which correspond to a video signal output of a computer.
- It can display the image by Analog RGB video signal from a computer via the Interface Unit.
- The display position and the image quality of the displayed image can be adjusted by using the DG2/A Utilities Components.

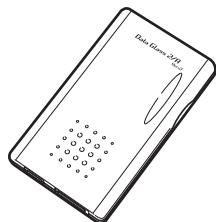
2 Components

2.1 Components

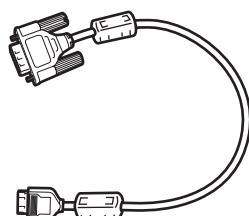
No.	Name of Component	Part Number	Quantity	Note
1	DataGlass2/A	734-78250-01	1ea	
1-1	HMD	734-78052-01	1	
1-2	Interface Unit	734-78040-01	1	
1-3	RGB Monitor Cable	734-78253-01	1	
1-4	USB Cable	734-78254-01	1	
1-5	Cover	734-77649-01	1	Accessory
1-6	Band	734-77636-01	1	Accessory
1-7	DG2/A Utilities	734-78264-01	1	Floppy Disk



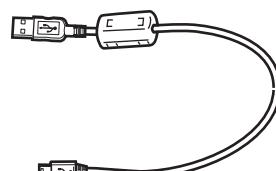
1-1 HMD



1-2 Interface Unit



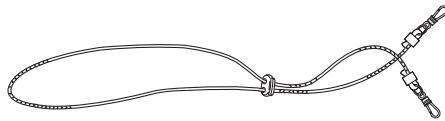
1-3 RGB Monitor Cable



1-4 USB Cable



1-5 Cover

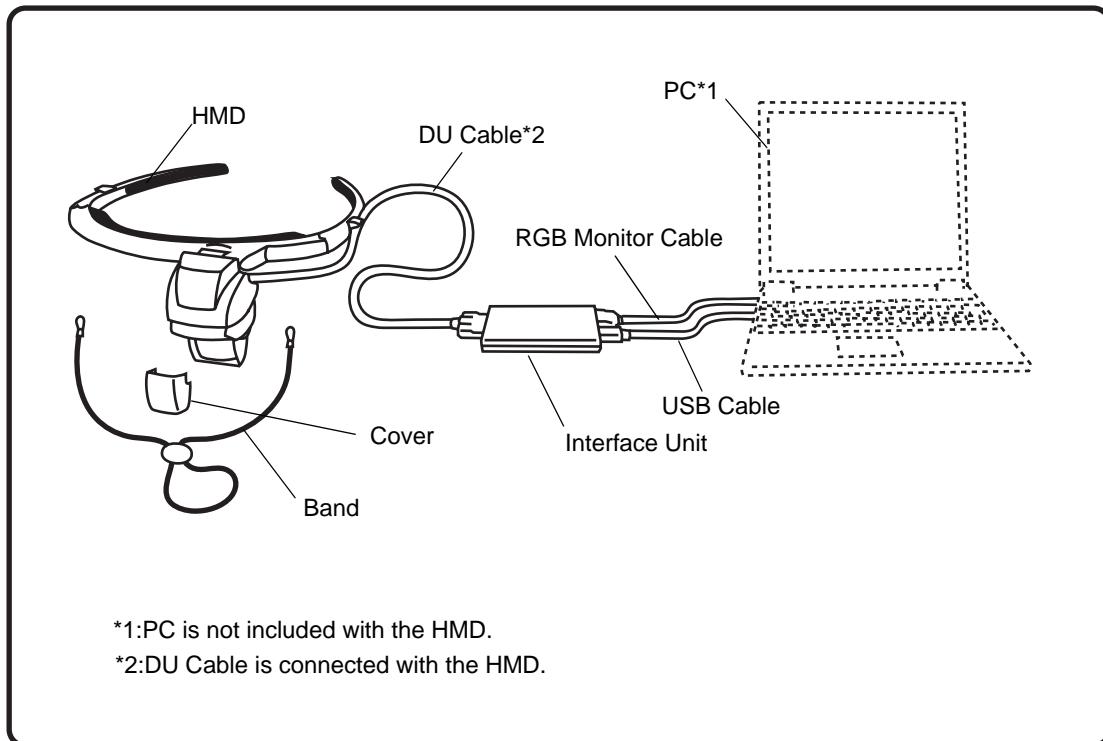


1-6 Band



1-7 DG2/A Utilities

2.2 Functions of Components



■ HMD

The HMD consists of the following components.

Display Unit (DU)	DU Cable	Use this Cable to connect the HMD and Interface Unit.
	Display	The video signal sent from a computer is processed by the display drive circuit, and an image will appear on the display device. An optical system magnifies the image to focus a virtual image at an appropriate distance, allowing the user to view it.
Adjustment Part	Use this part to adjust the Display Unit back and forth (Refer to page 17) to the left and right (Refer to page 30), or to perform tilt adjustment (Refer to page 31), so that the image can be easily seen with the Frame.	
Frame	Use this frame to mount the Display Unit onto the head.	

■ Interface Unit

The Interface Unit has the function of processing the video signal from the computer and transmitting it to the display driving circuit in the Display Unit. It also supplies the power from the USB.

■ **RGB Monitor Cable**

This cable connects the Interface Unit with the analog RGB monitor output of the computer.

■ **USB Cable**

This cable connects the interface unit with the USB port of the PC.

■ **Cover**

Attach this Cover to the HMD when using it in a bright place. The ambient light entering your eye will be reduced, so that the image can be more easily viewed.

■ **Band**

Attach this Band to the Frame if the mounted HMD is likely to slip or you want to fit the HMD firmly to your head. The band can prevent drift in the position of the mounted HMD.

■ **DG2/A Utilities**

This floppy disk includes the Virtual COM Port driver and the Image-Adjustment software. The Virtual Com port driver is the driver software for connecting the PC to DataGlass2/A by using the USB Cable. The Image-Adjustment software is software which adjusts the display position and the image quality of the image displayed in the HMD.

3 Specification

Operating Environmental Conditions

Temperature : 32 ~ 104 deg F (0 ~ 40 deg C)

Humidity : 35% ~ 90%RH (Non-Condensing)

Maximum Size

HMD	Approx. 6.18 (W) x 2.48(H) x 7.72(D)inches (not including DU Cable)
Cover	Approx. 1.18 (W) x 0.79(H) x 0.75(D)inches
Band	Approx. 19.69 inches (Length)
Interface Unit	Approx. 1.97 (W) x 0.39 (H) x 3.35(D) inches
RGB Monitor Cable	Approx. 11.02 inches (Length)
USB Cable	Approx. 11.02 inches (Length)

Weight

HMD	Approx. 75g (not including DU Cable)
Cover	Approx. 2g
Band	Approx. 14g
Interface Unit	Approx. 40g
RGB Monitor Cable	Approx. 50g
USB Cable	Approx. 42g

Adjustment Mechanism of HMD

Adjustable front-back (Refer to page 17)

Adjustable left-right (Refer to page 30)

Adjustable tilt (Refer to page 31)

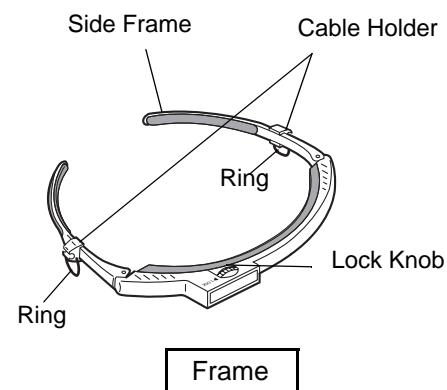
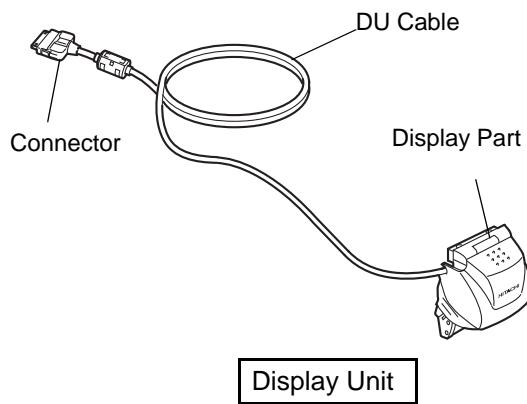
Can be pushed up when mounted (Refer to page 32)

Supply

DC 5V (USB)

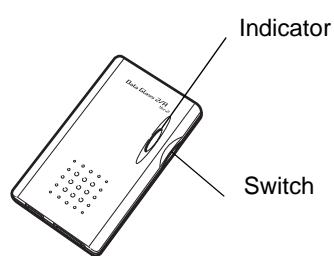
Power Consumption: Approx. 2.5W

4 Names of each part



Display Unit

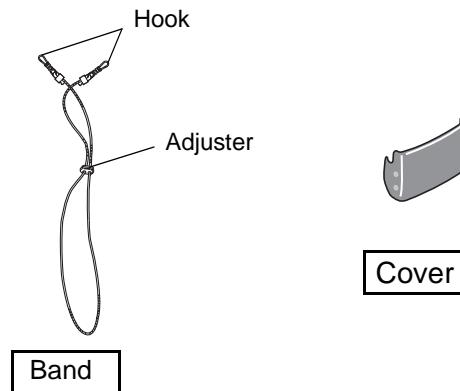
Frame



RGB Monitor Cable

USB Cable

Interface Unit



Cover

5 How to use

5.1 Setup of the Computer

This product can handle the resolutions and vertical frequency (refresh rate) listed below. If your computer has different settings, pre-set these values using a standard display. See the computer instruction manual for details about the setting procedure.

- Display mode SVGA, VGA (VESA Standards)
- Resolution 800 x 600, 640 x 480 dots
- Vertical frequency(Refresh rate) 60 Hz



This product operates only in video modes with SVGA (800x600 dots) or VGA (640x480 dots) resolution and 60 Hz refresh rate. The Windows VGA start-up screen may not appear in some cases.



This product has been adjusted using a standard computer. However, the video signal differs slightly according to the computer used, which may result in displacement of the image by a few dots or a moire pattern on gray screens. If this occurs, adjust the image as described in "Adjusting the Image" (see page 45).



If the image is simultaneously displayed on the laptop computer monitor and external monitors, some computers do not output 800x600 (640x480) dots/60 Hz image signal to the external monitor, even if the resolution is set to SVGA (VGA). In this case, DataGlass2/A cannot display the image.

5.2 Setting the Display Mode, Resolution, and Refresh Rate



The explanations here show Windows XP screens. However, the procedures are identical with Windows 98, Windows ME, or Windows 2000.

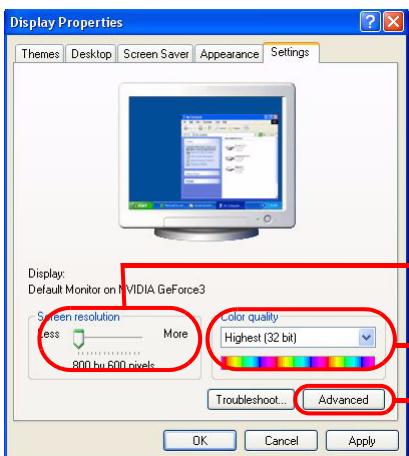
1.



Click [Start] and select [Control Panel] -> [Appearance and Themes]-> [Change the Screen Resolution].

(For Windows versions other than Windows XP, click [Start] and select [Settings] -> [Control Panel]-> [Display].)

2.



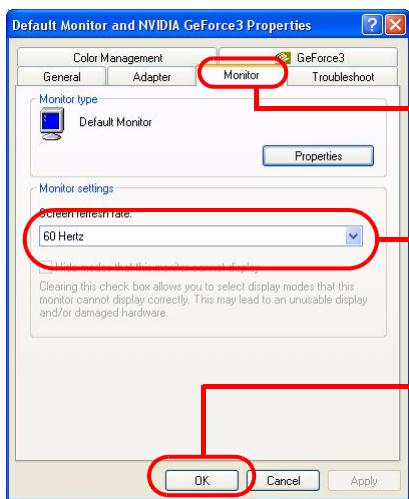
Set the [Screen Resolution] and [Color Quality] in the [Settings] tab.

- (1) Set the screen resolution to [800 x 600 pixels] (or [640 x 480 pixels]).
- (2) Set the colors to [Highest (32 bit)].
- (3) Click [Advanced]



The resolution cannot be set to 640 x 480 pixels with WindowsXP on this screen. Please set it according to the manual of PC or the graphics card used.

3.



- (1) Select [Monitor] tab.
- (2) Set the [Screen Refresh Rate] to [60 Hz].
- (3) Click [OK].

The display mode, resolution, and refresh rate settings are now complete.

5.3 Assembling the HMD

Attaching the Display Unit

Attach the Display Unit to the Frame.



caution

Be careful not to pinch your fingers when extending the Side Frames.



note

Turn the Frame over and attach the Display Unit again. The HMD allows you to view the image with either the right or the left eye.

1. Decide which eye to use for viewing, extend the Side Frames and place the Frame on a flat table, etc.

When viewing an image with the left eye, place the Frame so Lock Knob is on the left.

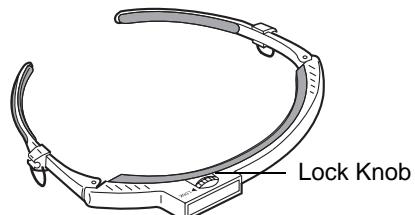


Fig. 1



note

Although this chapter explains the assembly procedure and mounting method, using the illustrations in which the image is viewed with the right eye, the assembly procedure and mounting method are identical when the image is viewed with either the right or the left eye.



caution

Grasp the display unit on both sides (as shown in Fig.2(A)) in the manner shown in Fig.2(B): Holding other portions may not allow correct setup or adjustment.

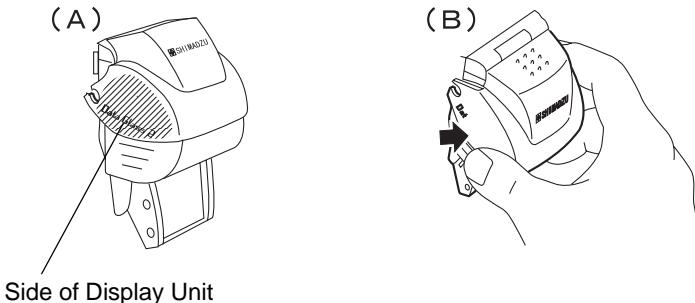


Fig. 2



caution

Do not touch the lens portion. Touching it could cause the lens to become dirty and/or the HMD to become damaged or faulty.

If the lens becomes dirty by touching, etc., wipe the dirt off according to the "Cleaning procedure" (see page 52).

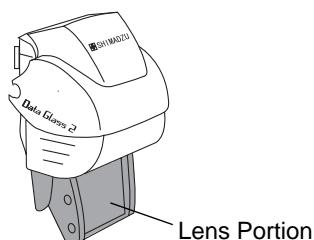


Fig. 3

2. DU Cable into the cable fixing notch

notch

Hold the display unit with one hand (Refer to Fig. 2 on page 14), and fit the DU Cable into the fixing notch with the other hand. The Display Unit has cable fixing notches on both sides: Fit the cable into the notch that is nearer to the cable holder on side frame, referring to the assembly shown in Fig. 9 or 10(Refer to page 17).

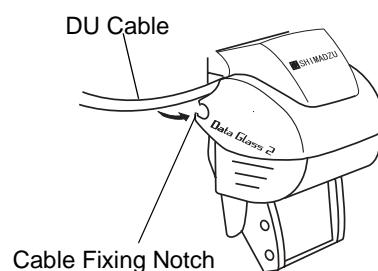


Fig. 4



warning

Be sure to pull the display unit to the maximum pull-out position before mounting the HMD on your head. If you mount the HMD without pulling out the display unit, the unit may touch your glasses, scratching the lens of the glasses or the lens of the unit.

3. Attach Display Unit

(1) Hold Frame with one hand.

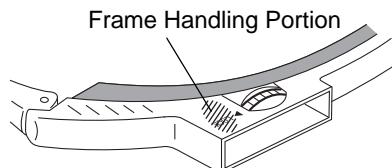


Fig. 5

(2) Hold Display Unit on both sides with the other hand and fit the unit into the locking position on the Frame. Make sure that the Display Unit is attached to the Frame at the right angle. Turn the Lock Knob in the Lock direction, with one finger holding the Frame. After attaching, make sure that there is no loose connection between the Frame and the Display Unit.

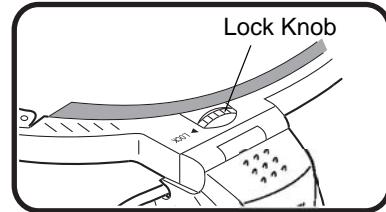
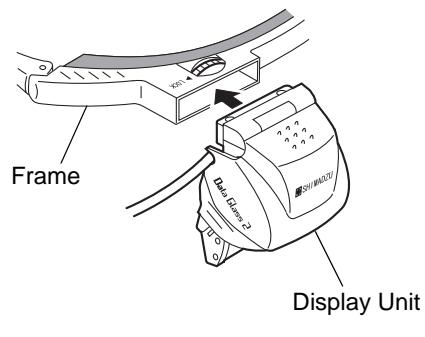


Fig. 6



caution

Make sure that the Display Unit is attached correctly. If the HMD is used with the Display Unit attached incorrectly, the Display Unit could fall, resulting in damage or malfunction.



caution

Turn the lock knob until it stops. Incomplete turning could allow the Display Unit to fall, causing damage.

4. Fit the DU Cable into the Cable Holder on the Side Frame.

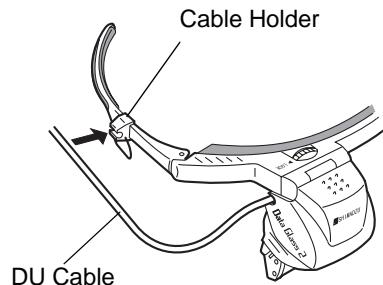


Fig. 7



The DU Cable should be loosened by approx. 2 cm when fitting it into the cable holder.

If the cable is fitted while stretched, the following may not be possible:

- Pulling out Display Unit (back-and-forth) adjustment (Refer to page 17).
- Checking the surrounding situation (Push-up-to-open operation) (Refer to page 32).

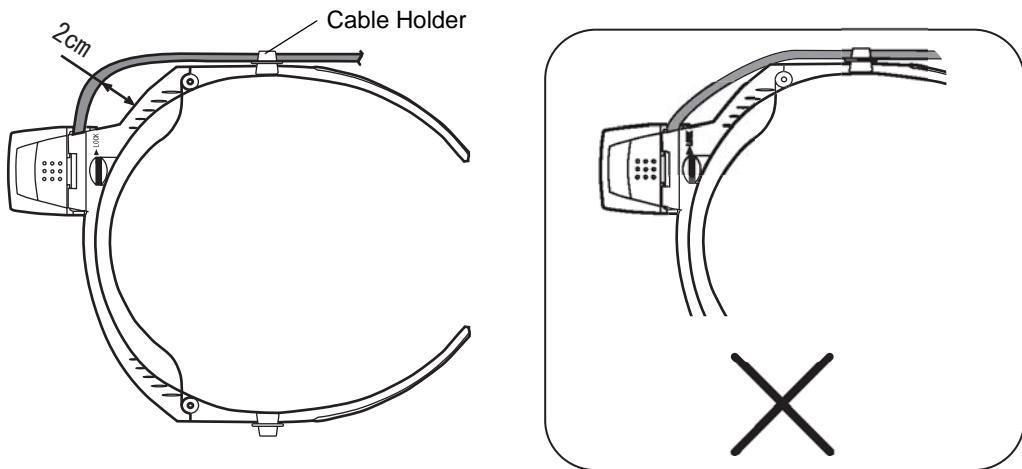


Fig. 8



Do not pull the DU Cable with undue force: Doing so could cause the HMD to become damaged or faulty, and using a damaged HMD could cause an electric shock.



note

Assembled when viewing with the right eye.

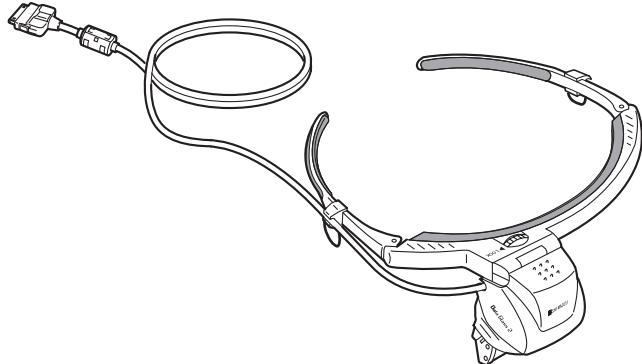


Fig. 9



note

Assembled when viewing with the left eye.

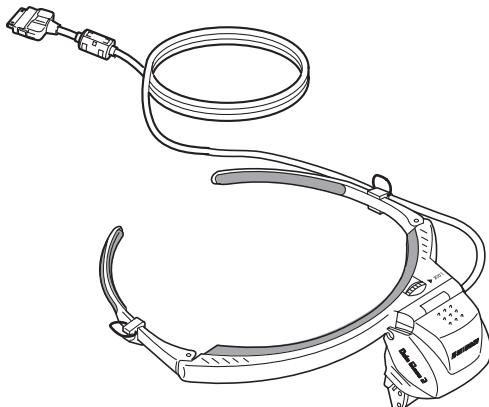


Fig. 10

Pulling out Display Unit (back-and-forth adjustment)

[When a user wearing glasses mounts the HMD]

When wearing glasses, please draw out the display unit before installing the HMD.



note

Be sure to pull the display unit to the maximum pull-out position before mounting the HMD. If you mount the HMD without pulling out the Display Unit, the unit may touch your glasses, scratching the lens of your glasses or the lens of the unit.

**note**

When pulling out the unit to adjust its position, be sure to hold the Display Unit on both sides while attached to the frame. Do not touch the lens. (Refer to page 14).

- 1. Hold the frame with one hand.
Hold the Display Unit on both sides with the other hand.**

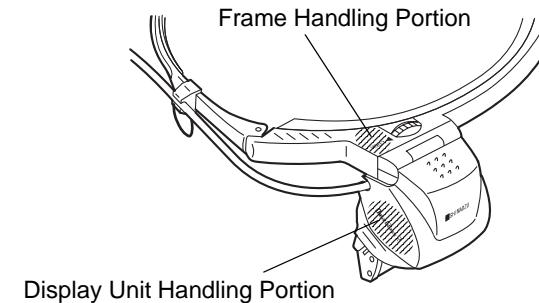


Fig. 11

- 2. Pull the Display Unit forward.
The unit will first come out by 5 mm, and then by another 2 mm, up to 7 mm in total.**

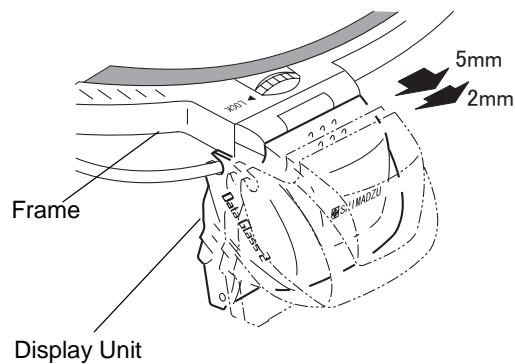


Fig. 12

**note**

If the display does not come in contact with your glasses, the display is more easily viewed when the drawn out position is returned to 5mm.

5.4 Connecting the HMD

Connect the HMD while the computer power is turned off.



caution

Do not connect or disconnect connectors while the computer is powered on. Doing so could cause a fault.

- Do not move the computer with connectors plugged in. Doing so could cause the HMD to fall or result in a fault.
- Do not subject the connectors of cables to any stress, such as by pulling the connectors with force. Doing so could cause the HMD and Interface Unit to fall or result in a fault.

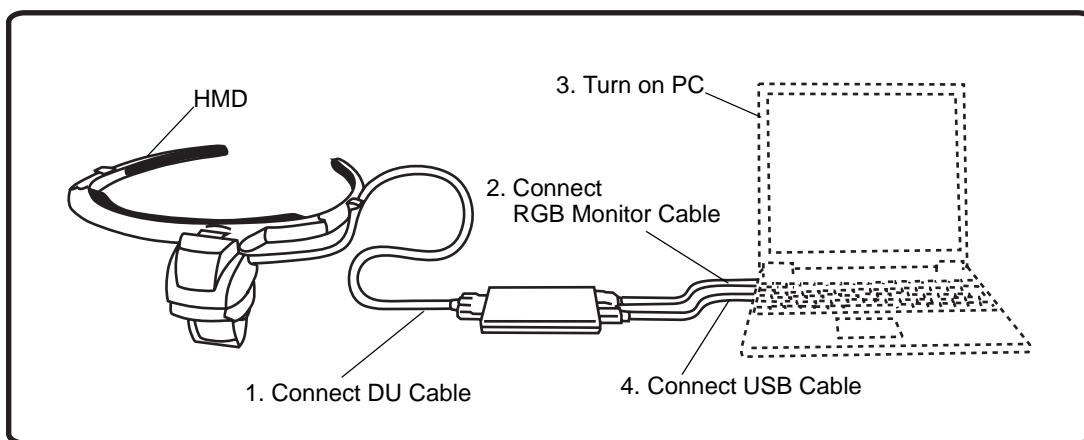


Fig. 13 Procedure of connection (image)



note

Please use a self powered USB hub (USB hub with an external power supply such as AC adaptors) when you want to use it together with two or more USB devices. This product cannot be used with a bus powered hub (USB hub without the power supply such as AC adaptors).

1. Connect the DU Cable to the Interface Unit.

Insert the DU Cable connector into the connector on the Interface Unit at right angles, with the convex portion on DU Cable connector facing down.

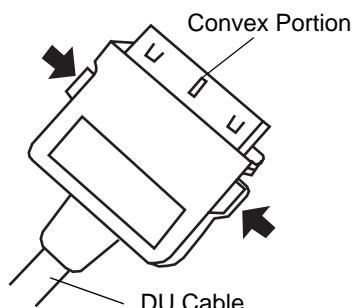


Fig. 14



caution

Please connect the HMD only to an Interface Unit with the logo "DataGlass2/A ver.2".

Connecting it with other equipment other than the correct Interface Unit will cause a failure and damage to the HMD.

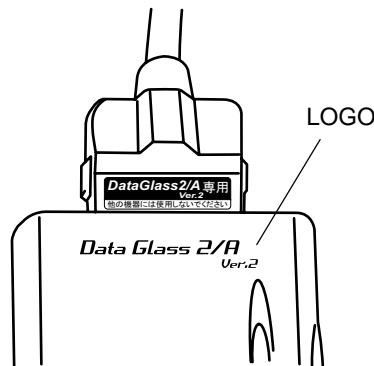


Fig. 15

2. Connect RGB Monitor Cable

(1) To Interface Unit

The connector (Smaller one) is connected to the Interface Unit. The connector cannot be inserted while it is upside down. Please confirm the shape of the connector and insert.

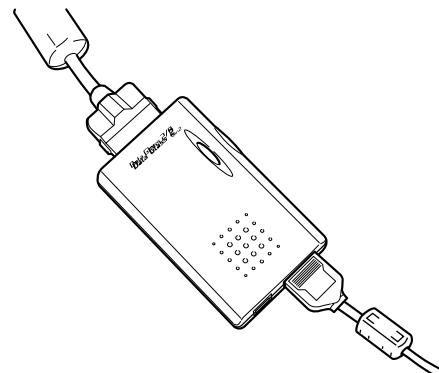


Fig. 16

(2) To a computer

The connector (Larger one) is connected to a computer. If a connector is upside down, it cannot be inserted. Please confirm the shape of the connector and insert.



note

When connecting RGB Monitor Cable; if the insertion of the connector is inadequate, a defect of operation such as a flickering image or abnormal colors may be produced.

3. Turn on the computer and start Windows.



note

When using this product as a primary monitor of a computer, the VGA image at the time of a startup is not displayed. Only an image of resolution SVGA (800x600 dots) and refresh rate 60Hz video mode can display even after Windows has started. Please set it up correctly in advance. Please refer to the manual of the computer being used for the setting method, or refer to "Setting the Display Mode, Resolution, and Refresh Rate" (see page 12).

4. Connecting the USB Cable

(1) Connecting to the Interface Unit

Connect the smaller connector to the Interface Unit. Check the connector orientation; it cannot be connected if inverted.

(2) Connecting to the computer

Connect the larger connector to the computer USB port.

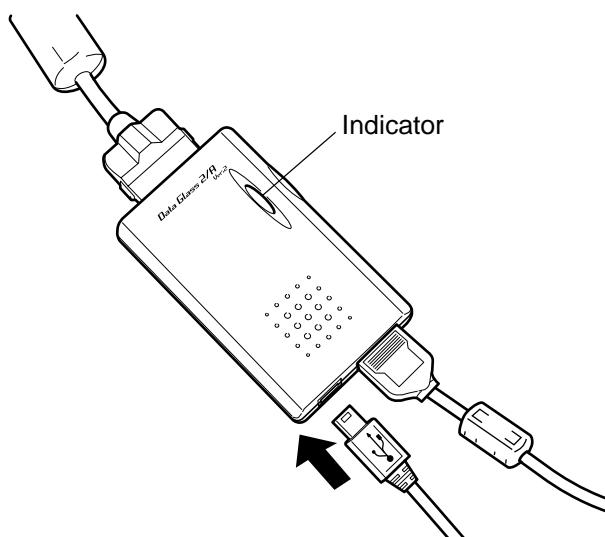


Fig. 17

5. The above procedure turns on the DataGlass2/A. The indicator flashes green and warm-up commences. After a few seconds, the indicator lights green continuously if an image signal is input, or lights red continuously if no image signal is input.



note

The indicator of the Interface Unit shows the DataGlass2/A status.

Indicator  = lit continuously  = flashing

Indicator	DataGlass2/A
	An image is being displayed.
	Warming up. Subsequently, the image is displayed if an image signal is input.
	No image signal input. The image is displayed when a correct image signal is input.
	Standby mode (display off). Hold down the button to display the image.
	No power

6. Displaying the Image on DataGlass2/A

If using a laptop computer, the image-signal output destination must be switched by key operation (using the key marked , for example) or by changing the settings.

Consult your computer's instruction manual for details.

The indicator lights green continuously when an image signal is input.

■ Using DataGlass2/A as the Secondary Monitor

If your computer is running Windows 2000 or Windows XP, this product can be used as the secondary monitor of a multiple-monitor configuration.

Check the computer instruction manual to determine whether your computer supports a multiple-monitor configuration.

See the computer instruction manual or Windows help for information about making the settings.



note

Some video graphics units used in computers are unable to support a video monitor with a fixed refresh rate, such as this product.

When using the simultaneous display function (the same image is simultaneously displayed on the LCD screen of a computer and external monitor) on the laptop computer, some computers do not output 800x600 (640x480) dots/60 Hz image signal to the external monitor, even if the screen setting is set to SVGA (VGA)



caution

Check if the image is displayed. If no image appears, remedy the problem using the "Troubleshooting Guide" (see page 53).

■ Selecting standby mode

The standby mode halts the image display and reduces power consumption.

- (1) To select the standby mode while an image is displayed, hold down the Interface Unit button for at least two seconds and then release it. The indicator flashes red.
- (2) To re-display the image, hold down the Interface Unit button again.

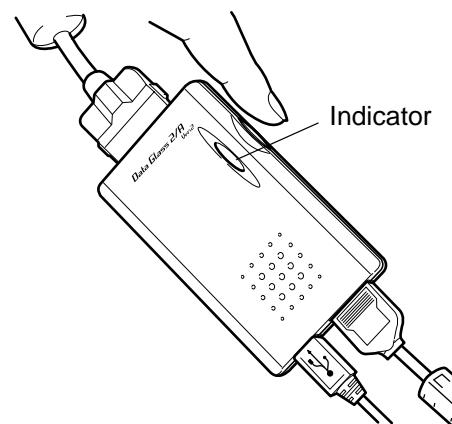


Fig. 18

5.5 Attach/Remove Band

Attach the Band before mounting the HMD, when it is needed.
Using Band before mounting HMD, when you need.



caution

The Band (included accessory) prevents position drift when the HMD is mounted to your head as it provides a tighter fit. Attach the back-band correctly to the HMD.



caution

Do not use the HMD with the Band attached as follows, or the HMD could fall, causing a fault or damage:

- Holding the back-band to carry the HMD around
- Hanging the back-band onto a hook on the wall to store the HMD



caution

Always attach or detach the Band before mounting the HMD on your head. Attaching or detaching the Band with the HMD mounted could damage your eye.

Attaching the Band



caution

Make sure that the back-band is correctly attached to the side frames. If the HMD is mounted with the Band attached incompletely, the Band will come off, and the HMD will fall, resulting in damage.

Attach the hook on both ends of the Band to the rings of the Side Frame. Make sure that both ends of the Band are attached securely.

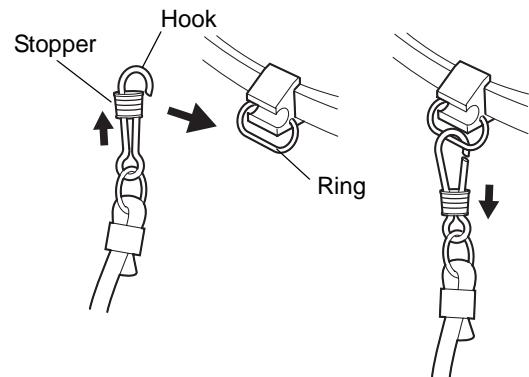


Fig. 19



note

Example for attaching the Band.

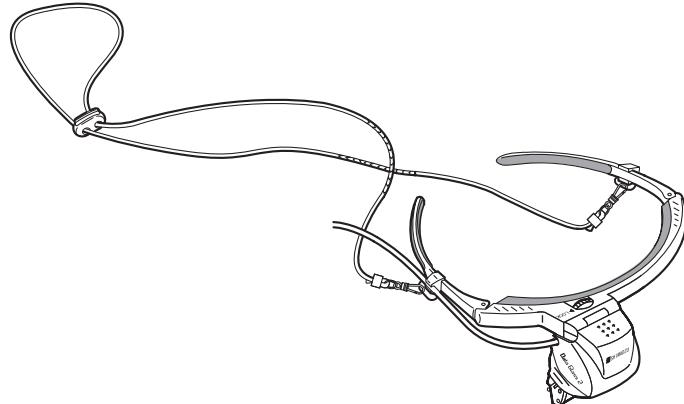


Fig. 20

Removing the Band

While holding the side frames of the HMD lightly, release the hooks of the Band.

5.6 Attaching/Detaching the Cover

Attach the Cover before you mount the HMD, when it is needed.



caution

- ◆ Store the Cover beyond the reach of small children to prevent it from being swallowed, or causing other injuries.
- ◆ Attach or detach the Cover before mounting the HMD. Attaching or detaching the Cover with the HMD mounted could result in damage to your eye.
- ◆ Be sure to hold the Display Unit on both sides. Do not touch the lens.(Refer to page 14)
- ◆ Make sure that the Cover is attached securely. If the HMD is mounted with the Cover attached incorrectly, the Cover will come off, causing damage to your eye.

Attaching the Cover

Hold the Display Unit on both sides with one hand, and hold the Cover with the other hand. After attaching the Cover, make sure that there is no loose fit between the Cover and the Display Unit.

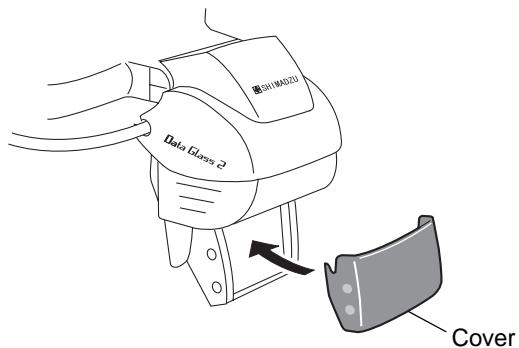


Fig. 21

Detaching the Cover

Hold the Display Unit on both sides with one hand, and hold the Cover on both sides with the other hand to remove it.

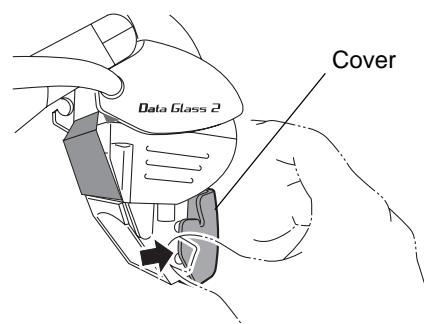


Fig. 22

6 Using DataGlass2/A

6.1 Mounting /Removing the HMD

Mounting the HMD



note

Before mounting the HMD, be sure to thoroughly read the cautions in this user's guide, and follow them.



caution

Use the HMD in the correctly mounted status. Using it when incompletely mounted could damage the eyesight

- Be sure to check the surrounding circumstances before using the device (work, movement, etc.). Neglecting this check could allow the Display Unit to bump into some object nearby, which could cause the lens to hit your face, resulting in injury to you and or damage to the HMD.
- Make sure that there is no loose fit between the frame and display unit. Using the HMD when it is incompletely fitted could cause the display unit to fall, resulting in damage.

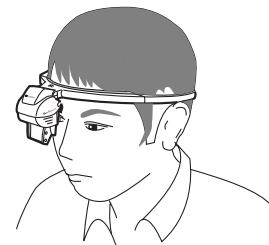


Fig. 23



caution

Hold side frames with both hands, widen them outward, and then mount the HMD from the top of your head.

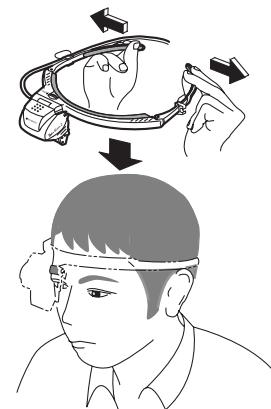


Fig. 24

**caution**

Hold the Side Frames with both hands and widen them outward when mounting the HMD on your head.

Do not widen the Side Frames with excess force, or widen them while grasping a portion other than the Side Frames. Doing this could damage the frame.

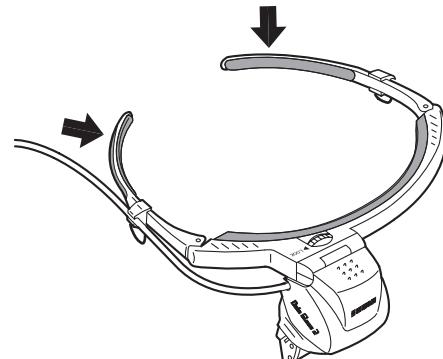


Fig. 25

**note**

When bringing the HMD near to the ear, some noise may be audible, but this does not indicate a fault.(The operation sound in the drive circuit of the source of light to the LCD might be heard.)

- 1. When using the Band, while holding the lock button, move the Adjuster closer to the center of the Band.**

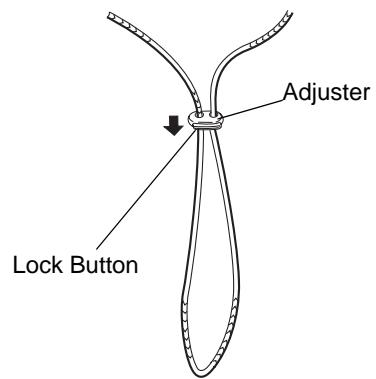


Fig. 26

- 2. Hold the ends of the Side Frames with both hands, and widen them outward.**

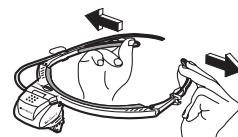


Fig. 27

3. Mount the HMD from the top of the head, hanging the Side Frames on your ears.

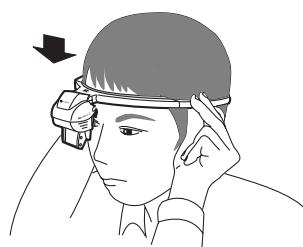


Fig. 28

4. Make sure that the Side Frames are on your ears, and then adjust the position of the Frame so that the pad of the Frame is securely fixed above the eyebrows.

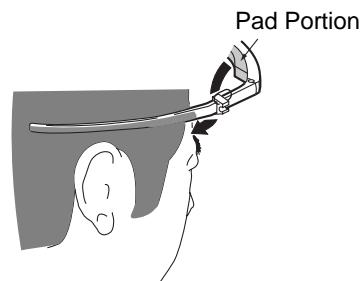


Fig. 29

5. When using the Band mount the HMD so the Band comes to the back of the head, and pull up the Adjuster

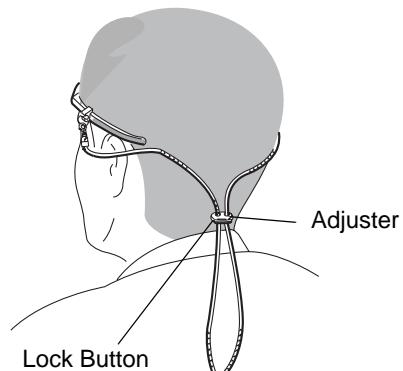


Fig. 30



note

Do not fasten the Adjuster on the head too strongly. It may cause headaches, etc., if it is fastened too tight.

Removing the HMD

1. When using the Band, while holding the lock button pressed, move the adjuster closer to the center of the Band.

2. Hold the side frames of the HMD with both hands, widen them outward, and lift the HMD to remove it from the top of the head.

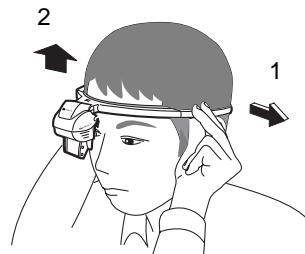


Fig. 31



caution

When removing the HMD, hold the side frames with both hands, widen them outward, and lift the HMD straight up to remove it from top of your head. If the HMD is removed forward, the side frame could come into contact with your eyes and damage them.

6.2 Adjust the position of the Display Unit

Repeat steps (1) to (3) below, and adjust the position of the Display Unit so that the image can be viewed best.

(1) Vertical adjustment

Hold the Frame with both hands and slightly move it up and down on the forehead. Adjust the Frame to the position for optical viewing of the entire image.

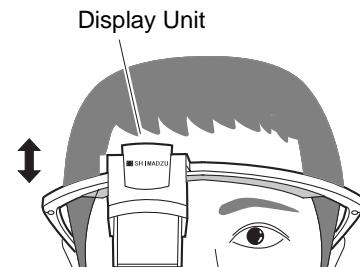


Fig. 32

(2) Horizontal Adjustment

a. While holding the Frame with one hand to prevent drift in position during horizontal adjustment, hold the Display Unit on both sides with the other hand.

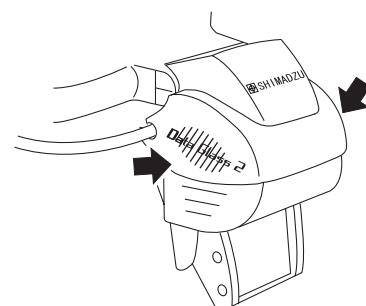


Fig. 33

b. Slide the unit to the left or the right. The entire Display Unit will move. Adjust the Display Unit to the position where both left and right ends of the displayed image can be viewed best.

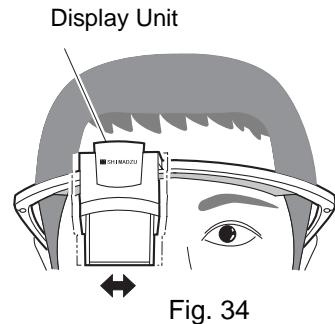


Fig. 34

(3) Tilt adjustment

a. While holding the Frame with one hand to prevent drift in position during tilt adjustment, hold the Display Unit on both lower sides with the other hand.

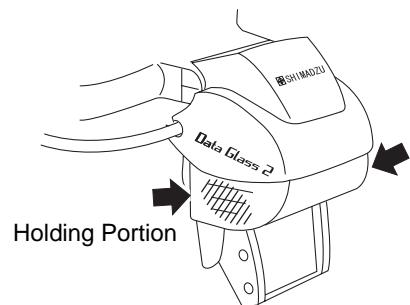


Fig. 35

b. Adjust the tilt of the unit. Adjust the Display Unit to the position where both bottom ends of displayed image can be viewed best.

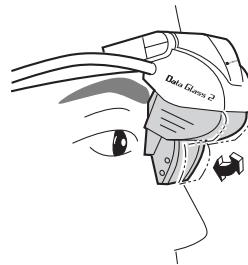


Fig. 36

6.3 At such time

Checking the surrounding situation (Push-up-to-open operation)

Push the Display Unit up to open. Check the surrounding situation with both eyes, while the HMD is mounted.

1. While holding the Frame with one hand to prevent drift in position during push-up-to-open operation, hold the Display Unit on both sides with the other hand.

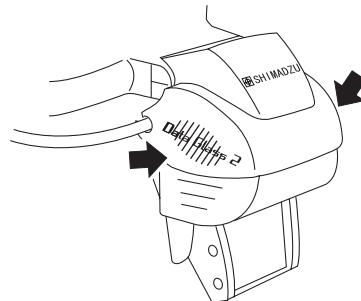


Fig. 37

2. Push Display Unit up to. The push-up angle is either 45 degrees or 90 degrees.
3. To return the Display Unit to its original position, push it down. After returning the Display Unit to its original position, it may be necessary to adjust the position of the Display Unit so the image can be viewed best (Refer to page 30).

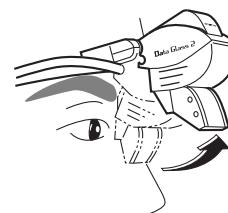


Fig. 38

Changing the image viewing

When you want to view the image the other eye, remove the Display Unit, turn the Frame over, and then reattach the Display Unit.



Do not pull the DU Cable with undue force: Doing so could cause the HMD to become damaged or faulty, and using a damaged HMD could cause an electric shock.



After pulling out the Display Unit (back-and-forth adjustment) (Refer to page 17), return the unit to the original position before removing it. Removing the Display Unit in the pulled out position could cause it to become damaged.

1. Set Display Unit in the not pulled out position.

2. Release the DU Cable from the Cable Holder.

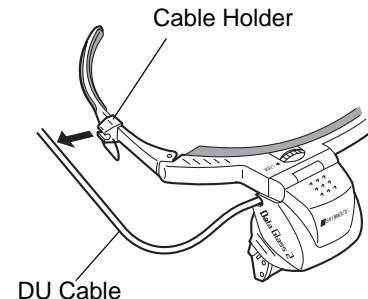


Fig. 39

3. Remove the Display Unit.

Hold the Frame with one hand, while holding the Display Unit on both sides with the other hand.

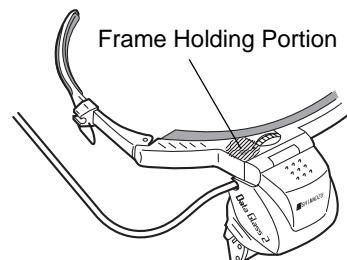


Fig. 40

Turn the lock knob in the direction opposite to LOCK, with one finger holding the Frame. The Display Unit will come loose from the Frame, and can be removed.

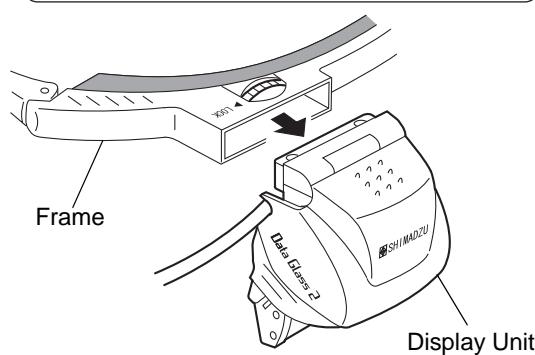
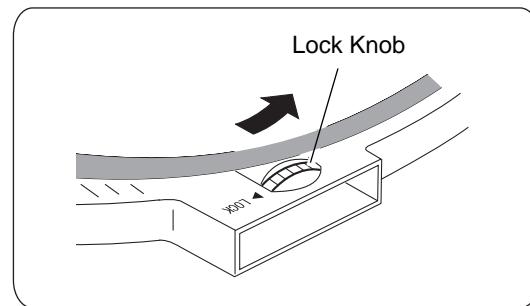


Fig. 41



Be sure to hold the Display Unit on both sides when removing it from the Frame (Refer to Fig. 2 on page 14). Do not touch the lens (Refer to Fig. 3 on page 14).

4. Release the DU Cable from the cable fixing notch.

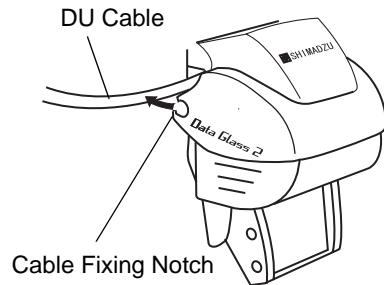


Fig. 42

5. Fit the DU Cable into the cable fixing notch on the other side.

6. Turn the Frame over and attach the Display Unit to it, referring to "Assembling the HMD" (see page 13).

7. Attach the DU Cable to the Cable Holder of a Side Frame.

6.4 Storing the HMD

When storing the HMD, be sure to read the cautions on choosing a storage site (Refer to page x). When storing the HMD for a long period of time, it is recommended that you clean the lens. Refer to "Cleaning" (see page 51).

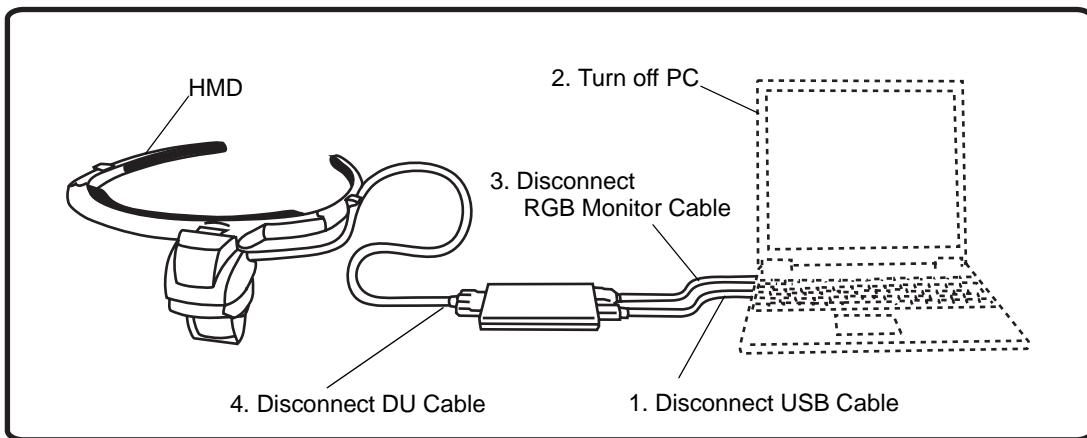


Fig. 43 Detaching procedure (image)

1. Disconnect the USB Cable

- (1) Disconnect the USB Cable from the computer.
Disconnect the USB Cable connector from the USB port of the computer.
The DataGlass2/A is powered off.
- (2) Disconnect the USB Cable from the Interface Unit

2. Turn off the computer.

Turn off the computer according to the shutdown procedure of Windows.



caution

Apart from the USB, do not insert or remove connectors to the computer while the power is on. This can cause failures.

3. Disconnect the RGB Monitor Cable

- (1) When disconnecting the RGB Monitor Cable connector from the PC, loosen the screws on both sides of the connector.
- (2) Disconnect RGB Monitor from Interface Unit.

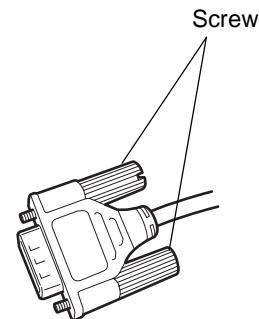


Fig. 44

4. Disconnecting the DU Cable

Disconnect the DU Cable from the Interface Unit.

When disconnecting the DU Cable connector, push on both sides of the connector in the direction shown by the arrows in Fig. 45.

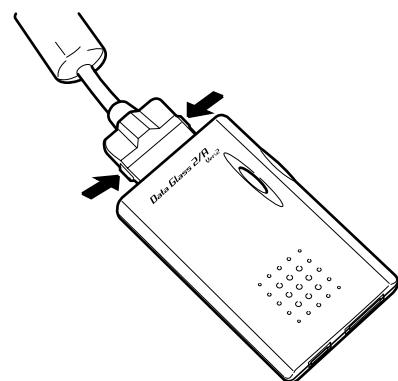


Fig. 45

7 Adjusting the Image

DG2/A Utilities disk contains the Virtual COM Port driver and the Image-Adjustment software.

The Virtual COM Port driver can be used to interconnect the Interface Unit and the PC via a USB Cable.

Image-Adjustment software can be used to adjust the position and image quality of the displayed images.

7.1 Operating Environment

Run the DG2/A Utilities software in the following operating environment.

Item	Description	Comments
Operating system	Microsoft Windows XP / Windows 2000 / Windows ME	Operates with both the Japanese- and English-language versions. Operation with other OS not guaranteed.
CPU	Clock speed 300 MHz min.	
Memory	128MB min.	
Display mode	VESA SVGA,VGA	If your computer has different settings, pre-set these values using a standard display. For details about the setting procedure, see "Setting the Display Mode, Resolution, and Refresh Rate" (see page 12) or your computer instruction manual.
Resolution	800 x 600 dots 640 x 480 dots	Vertical frequency (Refresh rate) 60Hz

7.2 Installation

Please install the software with the driver according to the following procedure when you use the DG2/A utilities for the first time.

- (1) Install the Virtual COM Port driver(*) .
- (2) Check the COM Port number.
- (3) Copy Image-Adjustment software to the hard disk.

(*) The Virtual COM Port driver is a product of Future Technology Device International Ltd.

**note**

The content of the DG2/A utilities may be updated at any time because of improvements. Please download from our homepage (<http://www.shimadzu.co.jp/hmd> or <http://spi-inc.com/dataglass.htm>) and use the latest driver and software.

**note**

The explanations here show Windows XP screens. However, the procedures are identical with Windows 2000 or Windows Me.

- ♦ Before installation, close the virus protection program and other system-resident programs.
- ♦ Please log in to the computer as an administrator of the computer when installing it in WindowsXP. It is necessary to log in as a group of Administrators when installing it in Windows2000.
- ♦ Wait at least 5 seconds between USB Cable connection and disconnection operations.

Do not connect or disconnect the USB Cable in the following situations:

- * during Windows start-up after the computer was turned on;
- * during installation of the Virtual COM Port driver.

Installing the Virtual COM Port driver

**note**

DataGlass2/A is recognized as a USB device by installing the Virtual COM Port driver in the PC.

In a PC which has two or more USB ports, the Virtual COM Port driver of each port where DataGlass2/A is connected might have to be installed.

1. Turn on the computer to start Windows.

2. Insert the floppy disk in the floppy-disk drive.

**note**

DG2/A Utilities disk contains "FTDI" and "utility" folders.

The Virtual COM Port Driver is contained in the "FTD" folder.

Image-Adjustment software (DG2_ADJ.EXE) is contained in the "utility" folder.

The procedure to run the software is described on "Running Image-Adjustment software" (see page 42).

3. Connect the computer and USB Cable while holding down the Interface Unit button.

Release the button when the Interface Unit indicator flashes green.

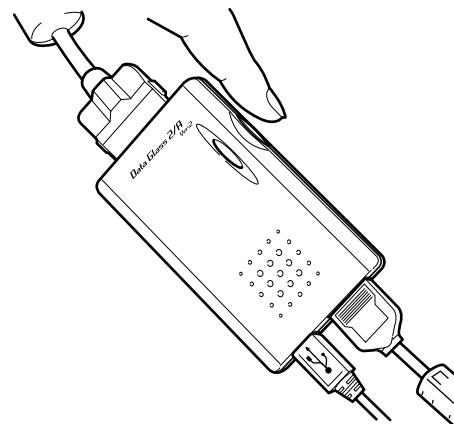


Fig. 46

4.



"Found New Hardware Wizard" window appears.

- (1) Click [Next].
- (2) "Please wait while the wizard searches..." appears.

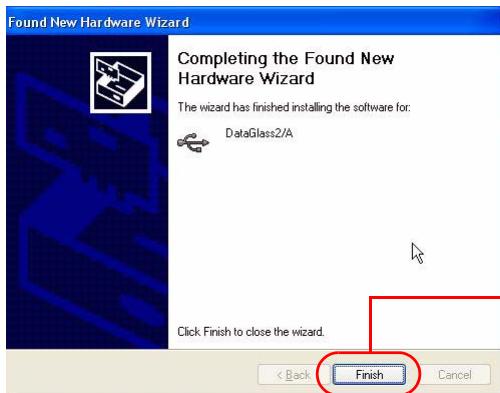
5.



"Hardware Installation" window appears.

Click [Continue Anyway].

6.



"Completing the Found New Hardware Wizard" appears, and "DataGlass2/A" has been installed.

Click [Finish].



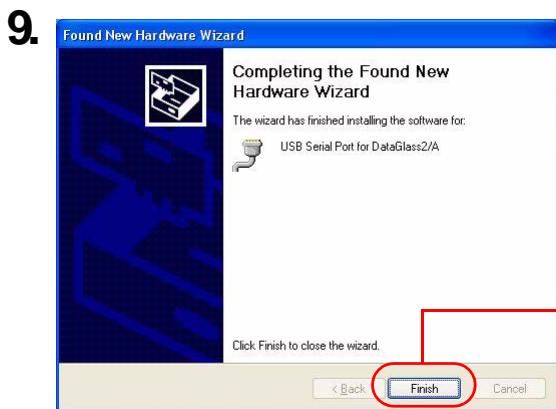
Next, new hardware is detected. "Found New Hardware Wizard" window at the left appears.

- (1) Click [Next].
- (2) "Please wait while the wizard searches..." appears.



"Hardware Installation" window appears.

Click [Continue Anyway].



"Completing the Found New Hardware Wizard" appears, and "USB Serial Port" has been installed.

Click [Finish].

Installation of the Virtual COM Port driver is now complete.

Checking the COM Port Number

Check to which COM Port the Interface Unit is allocated.

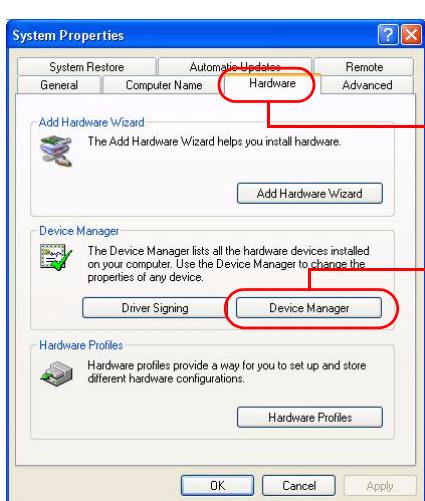
1.



Click [Start] and select [Control Panel]
-> [Performance & Maintenance]
-> [System].

(For Windows versions other than Windows XP, click [Start] and select [Settings] ->[Control Panel] -> [System].)

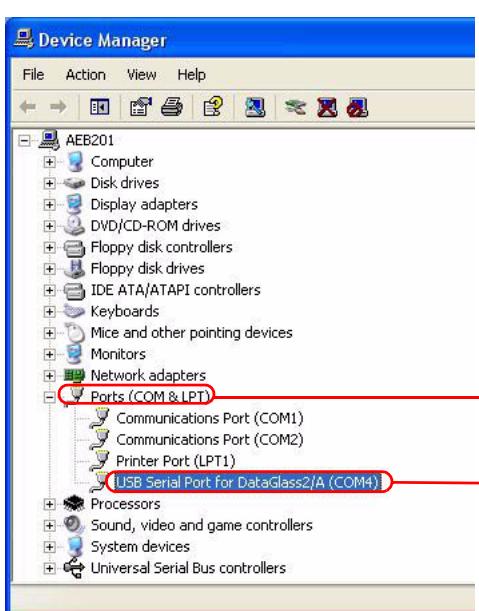
2.



(1) Select the [Hardware] tab.

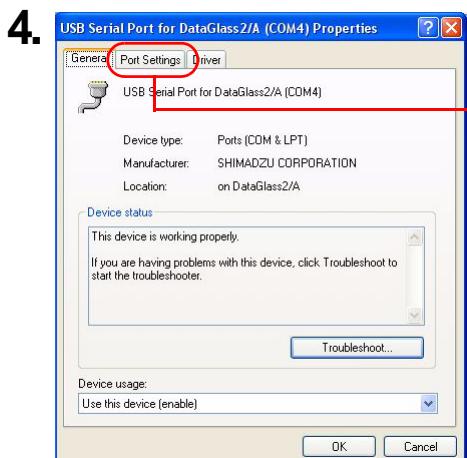
(2) Click [Device Manager]

3.



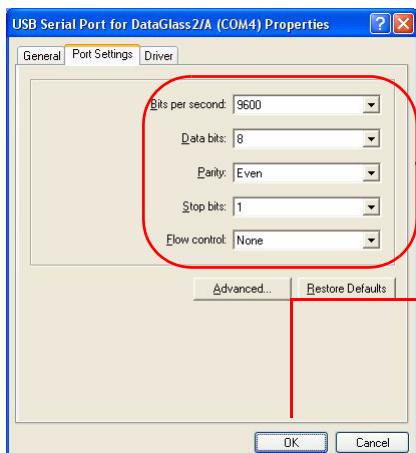
(1) Click [PORT (COM & LPT)]
Check the port number displayed
with [USB Serial Port for
DataGlass2/A].

(2) Double-click [USB Serial Port for
DataGlass2/A].



A window displays the "USB Serial Port for DataGlass2/A Properties"

(1) Select the [Port Settings] tab.



(2) Change the settings.
 Bits per second : 9600
 Data bits : 8
 Parity : Even
 Stop Bits : 1
 Flow control : None

(3) Click [OK].

Close the window after checking the port number and changing the settings.

Copying Image-Adjustment software to the Hard Disk

1. Create a folder to copy the software on to the hard disk.

In the following explanations, this folder is called C:\Utility.

2. Copy Image-Adjustment software from the floppy disk.

Copy A:\Utility\ DG2_ADJ.EXE to C:\Utility.

7.3 Running Image-Adjustment software

1. Display the image on the DataGlass2/A, as described in "Connecting the HMD" (see page 19).

If using a laptop computer, the image-signal output destination must be switched by key operation or changing the settings.

Consult your computer instruction manual for details.

2. Confirm that the image is displayed, and then temporarily disconnect the USB Cable from the computer.

3. Connect the computer and USB Cable while holding down the Interface Unit button.

Release the button when the Interface Unit indicator flashes green.

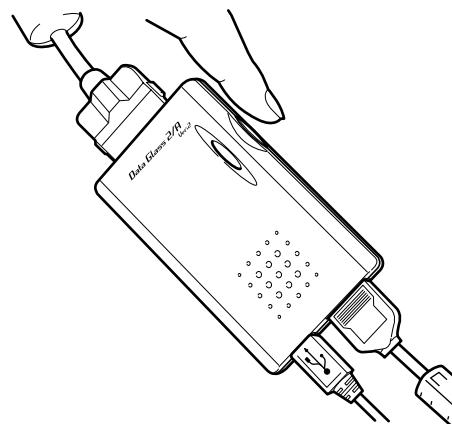
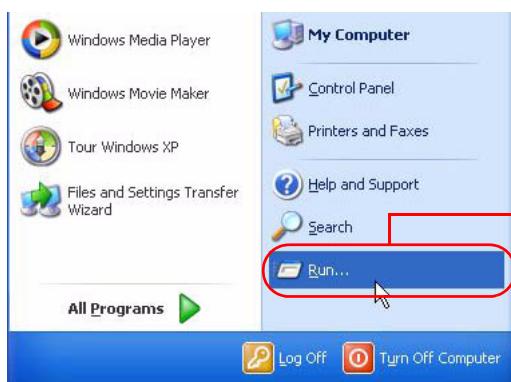
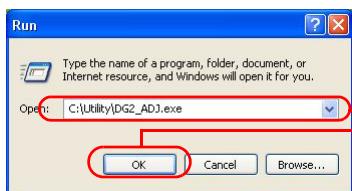


Fig. 47

4.

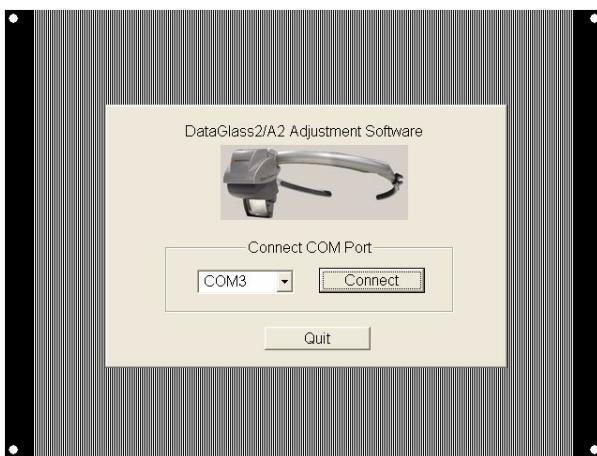


(1) Click [Start] and select [Run].



(2) Enter "C:\Utility\DG2_ADJ".

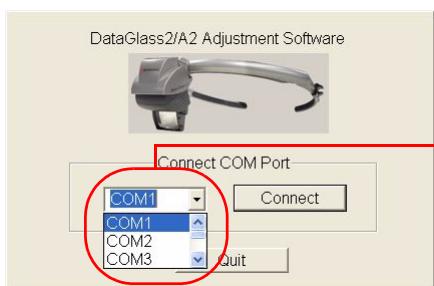
(3) Click [OK].



(4) The screen shown at the right is displayed when the software is run.

The Interface Unit indicator lights green continuously.

5.



Check the COM Port Number

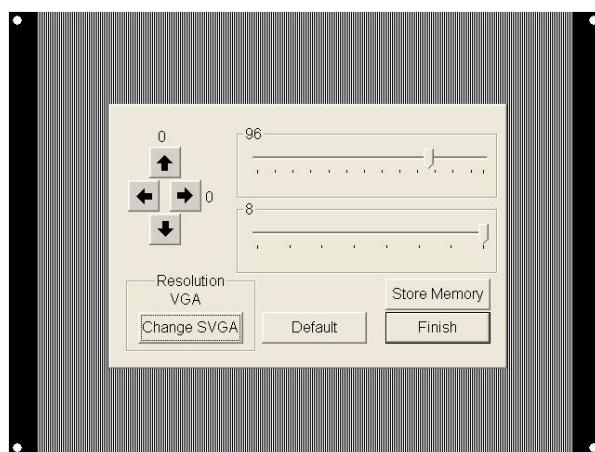
If the COM Port number differs from the COM Port number checked on page 41, click **q** until the same COM Port number is displayed.

6.



Click [Connect].
The [Connect] button becomes [Disconnect].

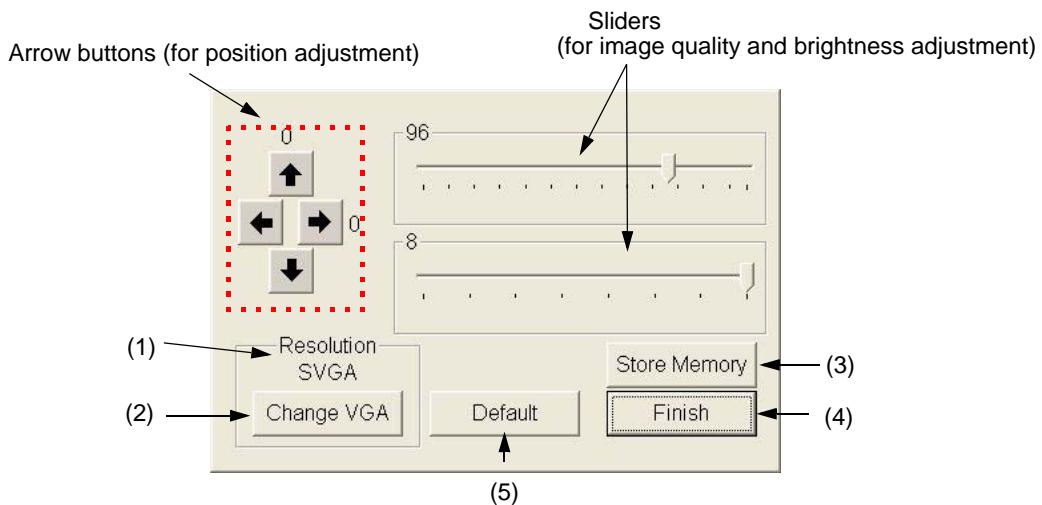
7.



After a short wait, the image adjustment window is displayed.

7.4 Adjusting the Image

The image adjustment window allows adjustment of the position, quality, and brightness of the displayed images.

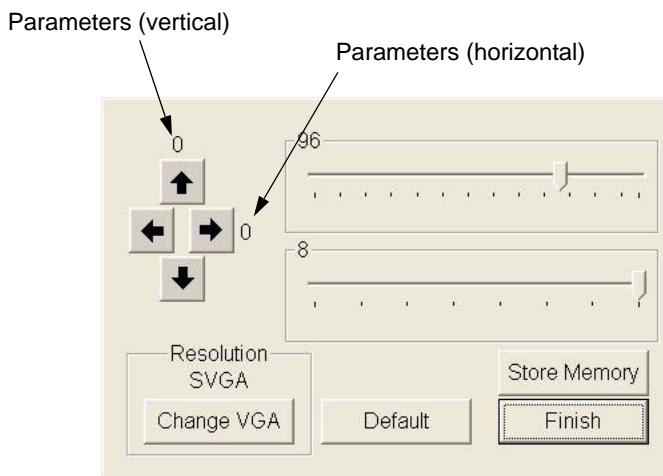


(1) Resolution	Displays the current image resolution (VGA or SVGA).
(2) [Change SVGA] ([Change VGA])	Changes the image resolution. Switches the resolution from SVGA to VGA or from VGA to SVGA. The button is displayed as [Change SVGA] when VGA resolution is selected. The button is displayed as [Change VGA] when SVGA resolution is selected.
(3) [Store Memory]	Stores the parameters in the Interface Unit. Four types of parameter are stored: * Image vertical position adjustment (Refer to page 46) * Image horizontal position adjustment(Refer to page 46) * Image Quality adjustment(Refer to page 47) * Brightness value adjustment (Refer to page 47)
(4) [Default]	The parameter is returned to the initial value. (Refer to page 48)
(5) [Finish]	Exits the software. (Refer to page 49).

Adjusting the Image Position

Adjust the vertical and horizontal image position. The parameters can be adjusted between -15 and +15.

The parameters differ according to the image resolution (VGA or SVGA).



1. Click an arrow button to increase or decrease the parameter and move the image one dot at a time in the corresponding direction.
Adjust the image position until the 1-pixel-wide white border of the background window appears above and below, and right and left of the image.
2. Click [Store Memory] to store the adjusted parameters in the Interface Unit.

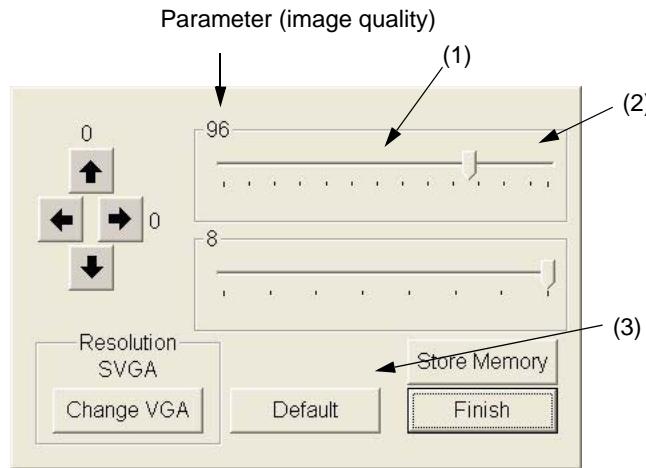


The image may appear distorted after the arrow button is clicked, but the normal image should return immediately. If the distortion remains, the parameter value may differ significantly from the normal value.

Adjusting the Image Quality

Correct for image bleeding, such as fuzziness around the border of characters or other well-defined areas. The parameter differs according to the image resolution (VGA or SVGA).

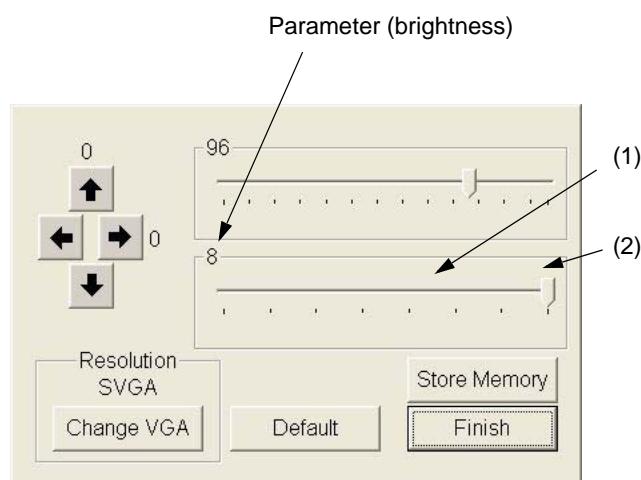
The parameter can be adjusted between 0 and 127.



- 1. Move the slider to change the parameter value.**
- 2. Click [Store Memory] to store the adjusted parameter in the Interface Unit.**

Adjusting the Brightness

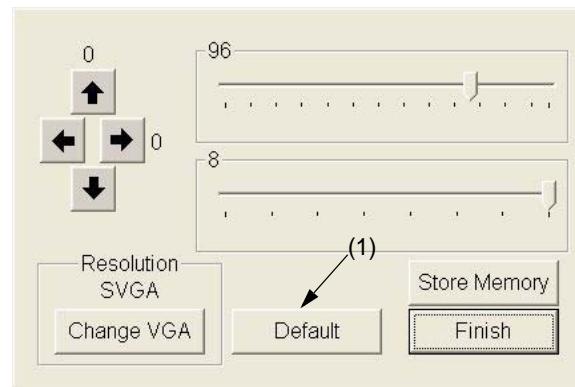
Adjust the image brightness. The parameter can be adjusted between 1 and 8. The parameter is fixed and independent of the image resolution (VGA or SVGA).



- 1. Move the slider to change the parameter value.**
- 2. Click [Store Memory] to store the adjusted parameter in the Interface Unit.**

Initializing the parameters

Initializing the parameters of the image position and the brightness.

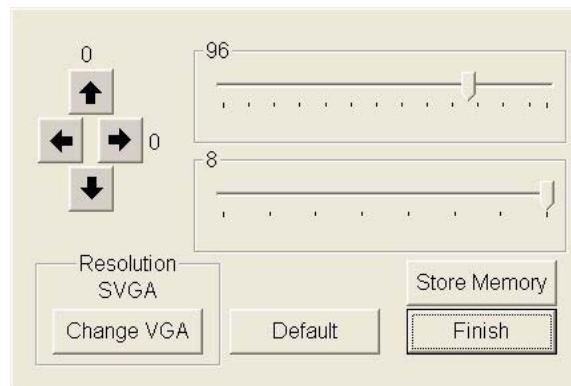


1. Click [Default]

The parameters of the image position and the brightness is initialized.

7.5 Exit the Software

1. Click [Finish].



2. Remove the USB Cable.

7.6 Uninstall

Please use the following procedure when you uninstall the DG2/A utility.

Uninstalling Virtual COM Port driver

- 1. Click [start] and select [Control Panel]->[Addition and Deletion of programs].**
- 2. FTDI USB Serial Converter Drivers is chosen in “Addition and deletion of the programs” window, and click [Change and Deletion].**
- 3. When uninstalling is completed, click [Finish].**

Deleting Image-Adjustment software

Please open the c:\Utility folder, and delete DG2_ADJ.EXE.

8 Cleaning

8.1 Caution for Cleaning

HMD, Interface Unit, Standard Accessories



caution

Do not use organic solvent, such as benzene, thinner, etc., to clean the HMD, Interface Unit and standard accessories Doing so could peel off the coating, etc., making it difficult to view the image.

Lens of the Display Unit



caution

Do not use organic solvents, such as benzene, thinner, etc., to clean the lens of the Display Unit. Doing so could melt the lens, peel off the coating, etc., making it difficult to view the image.



caution

When liquids, such as a chemical substance, oil, or a solvent, and sand adhere to the lens portion of Display Unit, clean the lens immediately according to the following procedures. If the adhering liquid etc. is left, the lens surface discolors, or it may crack, and making it difficult to view the image.



caution

Do not leave the Display Unit with any moisture adhering to the lens for a long period of time, or “burns” may occur, resulting in a blurred image.

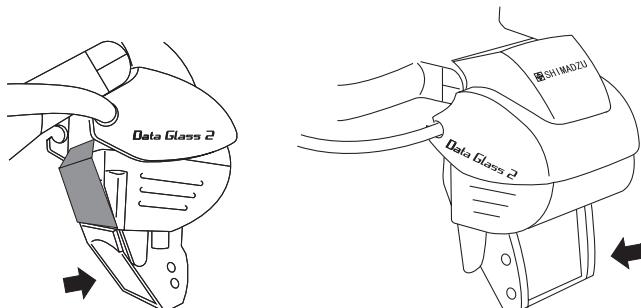


Fig. 48 The lens cleaning part

8.2 Cleaning procedure

1. Remove dust, dirt.

Use a generally available air brush or air cleaner to remove dust, dirt, etc. from the lens.

2. Wipe off moisture.

If moisture adheres to the lens, use lens cleaning paper, etc. to absorb it.

3. Wipe off dirt.

Lightly wipe off dirt, using lens cleaning paper or cleaner of glasses moistened in ethanol or isopropyl alcohol.



note

If ethanol or isopropyl alcohol is not available, lightly wipe off dirt, using lens cleaning paper or cleaner of glasses moistened with water, and then use lens cleaning paper, etc., to absorb any moisture remaining on the surface of the lens.

9 Appendix

9.1 Troubleshooting Guide

If you encounter difficulties while using this device, read through the following section to troubleshoot the problem.

■ No image appears

Check the DataGlass2/A status from the Interface Unit indicator.

Indicator	Cause	Remedy
Not lit 	No power	Check the USB Cable connection. Ensure that the computer is turned on.
Continuous red 	Correct image signal not input to interface	Ensure that the image signal output from the computer is set to 800x600 (640x480) dots resolution and 60 Hz refresh rate. (If the image is simultaneously displayed on the laptop computer monitor and external monitors, some computers do not output a 800x600 (640x480)/60 Hz image signal to the external monitor, even if the resolution is set to SVGA (VGA)).
	The video signal of the computer is not outputted to the external monitor.	Change the destination of the image signal output by the computer. (see the user's manual of a computer in detail).
Flashing red 	Standby mode	Cancel the standby mode. Hold the Interface Unit button for at least two second to cancel the standby mode.
Continuous green 	DU Cable not connected correctly	Correctly connect the DU Cable to the Interface Unit.

■ Abnormal image

Cause	Remedy
Windows is carrying out unusual operation.	Connect the standard display of the computer, and carry out a Windows recovery.
The connection of cables is wrong or it is not securely connected.	Turn the computer off, and check the connection of cables.

■ Image is not seen easily.

Symptom	Cause	Remedy
Image is dark or blurred.	HMD is not correctly mounted.	Mounting it correctly. (Refer to "Mounting the HMD" on page 27)
	The lens of the Display Unit is dirty.	Clean it. (Refer to "Cleaning" on page 51)
An image sifts by the width a few dots.	This product has been adjusted by a standard computer, however when a computer which has even a slight drift in the video signal is used, these phenomena are generated.	The image is adjusted with Image Adjustment software. (Refer to "Adjusting the Image" on page 37) Change computers.
A moire pattern is displayed on a gray color image.		In the case of a lap top type computer, Stop displaying it on the LCD display of the computer, and set it for external monitor only. Change the video card in the case of a desktop type computer.
Moving light horizontal lines are visible in an image.		

■ Image-Adjustment software Start-up screen remains displayed



Cause	Remedy
Interface Unit was connected to the USB Cable of the computer without pressing the Interface Unit button.	(1) Click [Quit]. (2) Disconnect the USB Cable of the computer (3) Connect the computer and USB Cable while holding down Interface Unit button. (4) Re-start the Image-Adjustment software.
Incorrect COM Port number	(1) Click [Quit]. (2) Check the COM Port number (Refer to page 41). (3) Re-start the Image-Adjustment software. (4) Select the correct COM Port number and click [Connect].

■ An error occurs when [Connect] is clicked on the Image-Adjustment software Start-up screen



Cause	Remedy
Incorrect connection of video signal cable to Interface Unit	Correctly connect the video signal cable to the Interface Unit.
Incorrect connection of video signal cable to computer	Correctly connect the video signal cable to the computer.
Correct image signal not input to Interface Unit	Change the destination of the image signal output by the computer.

9.2 Name plate

The serial number (S/N) of the Interface Unit (DataGlass2/A) has been printed on the name plate on the back of the Interface Unit.

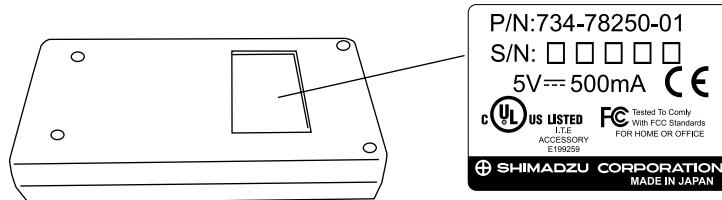


Fig. 49

The serial number (S/N) of the Display Unit is inside the rear part.

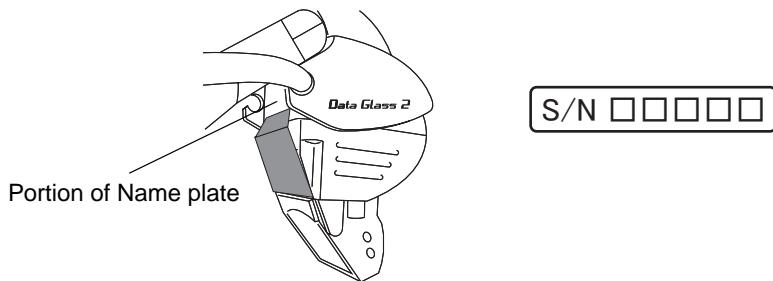


Fig. 50

9.3 After-sale Service

When out of condition, refer to the "Troubleshooting Guide" (see page 53), and take appropriate measures. When the abnormal state remains, request repairs to a distributor. Fixing personally should be avoided absolutely. If there are repairs requests, questions, etc., contact the "Contact address" (see page iv).

10 Regulations

10.1 FCC compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



warning

Any unauthorized modification to this equipment could result in the revocation of the authorization to operate the equipment and void the product warranty.

10.2 Declaration of Conformity

No. SPI-LEL-4011

Declaration of Conformity

according to FCC Part 15 Class B

Product Identification

Product Name : Head Mounted Display
Model Name : DataGlass2/A
Model Number : 734-78250-01

Manufacturer

Name : Shimadzu Corporation Aircraft Equipment Division
Address : 1, Nishinokyo-Kuwabaracho, Nakagyo-ku, Kyoto, 604-8511
Country : JAPAN

USA Representative

Name : Shimadzu Precision Instruments, Inc.
Address : 3111 Lomita Boulevard Torrance, CA 90505, U.S.A.
Telephone : 310-517-9910

Standards Used

Rules : CFR 47(FCC) Part 15 Subpart B
Type of device : Class B personal computers and peripherals
Test procedure : ANSI C63.4:2001 and CISPR22:1997

Note 1) This declaration becomes invalid if technical or operational modifications are introduced without manufacturer's consent.

Note 2) This declaration is valid if this product is used alone or other instruments which fulfill with the requirement of mentioned standards.

06/02/2004

Signature of USA Representative :



Atsushi Nishizaki

President

Shimadzu Precision Instruments, Inc.

Index

A

Adjuster 9, 28, 29
Adjusting the Brightness 47
Adjusting the Image 45
Adjusting the Image Position 46
Adjusting the Image Quality 47
Adjustment Part 4

B

back-and-forth adjustment 17
Band 3, 5, 9, 23, 28

C

Cable Fixing Notch 14, 34
Cable Holder 9, 16, 33
Change SVGA 45
Change VGA 45
Changing the image viewing 32
Cleaning 51
COM Port Number 41, 44
Components 3
Connecting 19
Connector 9
connector 19, 20, 21
convex portion 19
Cover 3, 5, 9, 25

D

DataGlass2/A 3, 20, 21, 27, 35, 53
DataGlass2/A status 21
DG2/A Utilities 1, 3, 5, 37
Display Mode 12
Display mode 11, 37
Display Part 4, 9
Display Unit 4, 9, 13, 15, 25, 30, 31, 33, 51
Display Unit Holding Portion 18
DU Cable 4, 9, 14, 33, 36
DU Cable connector 19

E

Example for attaching Band 24

F

Frame 4, 9, 13, 15, 33
Frame Holding Portion 15, 18

G

glasses 17

H

HMD 3, 4, 13, 17, 19, 23, 27, 29, 30, 32, 35, 51
Holding Portion 31
Hook 9, 23
Horizontal Adjustment 30

I

Image-Adjustment software 5, 37, 42, 55
Indicator 9, 21, 43, 53
Interface Unit 3, 4, 9, 20, 51

L

laptop computer.....	22
left eye.....	17
Lens.....	14, 51
Lock Button	28, 29
Lock Knob.....	9, 13, 15, 33

M

multiple-monitor.....	22
-----------------------	----

N

Name plate.....	56
-----------------	----

O

operating environment.....	37
----------------------------	----

P

Pad Portion.....	29
Portions of cleaning lens	51
Procedure of connection.....	19
push-up angle	32
Push-up-to-open operation	32

R

Refresh rate	11, 12
Resolution.....	11, 12, 37, 45
RGB Monitor Cable.....	3, 5, 9, 20, 36
right eye	17
Ring.....	9, 23

S

secondary monitor.....	22
Side Frame.....	9, 16, 28
Specification.....	7
Standard Accessories.....	51
standby mode.....	22
Stopper.....	23
Store Memory.....	45
storing HMD.....	35
Switch	9

T

Tilt adjustment.....	31
Troubleshooting	53

U

USB Cable.....	3, 5, 9, 21, 43
USB port	21

V

Vertical adjustment.....	30
Vertical frequency.....	11
Virtual COM Port driver	5, 37, 38, 40

W

Windows	20
---------------	----



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